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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/372,343	08/11/1999	KAZUAKI SAIKI	001.0080	1292

7590

03/28/2002

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EXAMINER

LEE, HWA S

ART UNIT

PAPER NUMBER

2877

DATE MAILED: 03/28/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/372,343

Applicant(s)

SAIKI ET AL.

Examiner

Andrew H. Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 August 1999.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takayama (6,169,603).

Takayama shows a reticle inspection system (Figure 2) comprising:

a movable stage (2) which has a first portion (2) to support an object and a second portion (the scale on the stage);

a first position detector (4) which optically detects the position of said first portion in a predetermined measurement direction; and

a second position detector (12) which optically detects the position of said second portion in said predetermined measurement direction

a stage controller (11)

Takayama does not expressly show the drive mechanism, however it would have been obvious at the time of the invention to have a drive mechanism which drives said movable stage in at least a first direction, at least part of the drive mechanism being coupled to said second portion since Takayama does not show any criticality in the location where the drive is attached and furthermore, since the second portion and the

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first portion is formed integrally, driving the second portion would move the first portion also.

As for claims 2, 6 and 12, Takayama's stage controller drives the stage according to the position detectors.

As for claim 3, although Takayama does not expressly show that the first and second portions are integrally formed, it has been held that making a formerly device of various elements in an integral structure involves only routine skill in the art.

As for claim 4, although Takayama does not express show a linear motor, Official Notice is taken that linear motor for driving substrate stages (are/is) old and well known in the art. See *In Re Malcolm* 1942 C.D.589: 543 O.G.440. At the time of the invention, it would have been obvious to use a linear motor in order to move the stage in the desired direction.

As for claim 7, although Takayama does not express show the system being used for a scanning exposure system, it would have been obvious to use Takayama in a scanning exposure system in order to obtain accurate stage position information in a scanning exposure system.

As for claim 8, Takayama does not express show the laser interferometer and the laser scale being used for a wafer stage so that the projection system is between the mask and object (wafer). It would have been obvious to use the measuring system (laser scale and the interferometer) for the wafer stage since the use of a single interferometer is notoriously well know to be used for measuring the position of a wafer

stage and Takayama teaches that the measuring system is more accurate than just the use of a single interferometer.

As for claims 9 and 10, Takayama does not show any of the other drive mechanism. Official Notice is taken that drive mechanism for driving the stage in any of the three axis of direction (are/is) old and well known in the art. See *In Re Malcolm* 1942 C.D.589; 543 O.G.440. It would have been obvious to one of ordinary skill in the art to use a second drive to move the stage along axis of the projection system in order to focus the projection pattern on the wafer.

As for claim 11, Takayama teaches that the laser interferometer cancels the errors (including vibrations) between the objective lens and the stage, but does not expressly show where the reference mirror of the laser interferometer is located. However, it would have been obvious to one of ordinary skill in the art that the reference mirror would be located on the objective lens (3) since the principle of laser interferometers compares the light reflected from two objects, and in this case the two objects are the stage and the objective lens.

As for claims 13-15, Takayama's apparatus corrects for vibrations of the reference mirror based on the output of the correction device and corrects for errors in the stage instruction signals.

Papers related to this application may be submitted to Technology Center (TC) 2800 by facsimile transmission. Papers should be faxed to TC 2800 via the PTO Fax Center located in CP4-4C23. The faxing of such papers must conform with the notice

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published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CP4 Fax Center number is (703)308-7722 or 308-7724.

If the Applicant wishes to send a Fax dealing with either a Proposed Amendment or for discussion for a phone interview then the fax should:

- a) Contain either the statement "DRAFT" or "PROPOSED AMENDMENT" on the Fax Cover Sheet; and
- b) Should be unsigned by the attorney or agent.

This will ensure that it will not be entered into the case and will be forwarded to the examiner as quickly as possible.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew H. Lee whose telephone number is (703) 305-0538.

Any inquiry of a general nature or relating to the status of this application should be directed to the TC receptionist whose telephone number is (703) 308-0956.

Andrew Lee
Patent Examiner
Art Unit 2877
March 25, 2002/ahl



Frank Font
Supervisory Patent Examiner
Art Unit 2977